

## SPECIFICATIONS

### HYDROGEN MASER

#### STABILITY

Allan deviation (measured in 1Hz bandwidth):

##### Averaging Time

1s  
10s  
100s  
1000s  
Floor\*

##### Stability

Less than or Equal to  $2.0E-13$   
Less than or Equal to  $5.0E-14$   
Less than or Equal to  $1.3E-14$   
Less than or Equal to  $3.2E-15$   
Less than or Equal to  $3.0E-15$

Long term drift rate should be less than or equal to  $2.0E-16$  per day (Achieved after extended period of unperturbed, continuous operation)

Auto tuning: no external reference required

#### ENVIRONMENTAL

Temperature sensitivity:

Less than  $1.0E-14$ /degrees C

Magnetic sensitivity:

Less than  $3.0E-14$ /Gauss

Power source sensitivity:

Less than  $1.0E-14$

Barometric Pressure:

Less than  $3e-15$ /kPa

#### FREQUENCY CONTROL CAPABILITY

Synthesized frequency resolution: Less than or Equal to  $7.0E-17$

Frequency control range: Greater than or Equal to  $7.0E-10$

The synthesizer must maintain continuous phase through a frequency change.

#### AVAILABLE OUTPUTS

##### Frequency

5 MHz  
10 MHz  
100 MHz

##### Amplitude

13dBm  
13dBm  
13dBm

##### # of outputs

Greater than or Equal to 3  
Greater than or Equal to 1  
Greater than or Equal to 1

Load impedance: 50ohms $\Omega$

#### PHASE NOISE

5 MHz outputs

Offset from carrier

1 Hz  
10 Hz  
100 Hz  
1 KHz  
10 KHz  
100 KHz

Single Side-Band Phase Noise in a 1Hz Bandwidth

Less than or Equal to -90dBc  
Less than or Equal to -110dBc  
Less than or Equal to -130dBc  
Less than or Equal to -140dBc  
Less than or Equal to -150dBc  
Less than or Equal to -155dBc

**POWER**

Operating voltage:	85 to 264 VAC
Frequency range:	47 to 63 Hz
Peak power:	Less than or Equal to 150W
Operating power:	Less than or Equal to 75W
External DC input: 22 to 28 VDC	At least 3.1A
Standby battery (built-in):	No less than 8 hours operation

**RELIABILITY**

Mean Time Between Failure (MTBF)	No less than 5 years
Separate information on the MTBF for (1) the physics package (cavity, storage bulb, loss of vacuum, hydrogen disassociator, etc) and (2) all other electronic components shall be supplied.	

**DOCUMENTATION:** The contractor shall provide standard technical and operation and maintenance manuals. All applicable software for effective operation of the system shall also be provided.

**WARRANTY:** The contractor shall provide a standard commercial warranty against all parts and labor

**DELIVERY:** System delivery shall be no later than three (3) months after contract award.